WHAT IS CLAIMED IS

1. Thermally modified carbon blacks comprising a particle size of between 7nm to 500nm and an oil adsorption number between 30 to 300 ml/100g, the carbon blacks produced by a continuous electrothermal furnace treatment process.

2. The thermally modified carbon blacks in claim 1, wherein the carbon blacks comprise thermal carbon blacks and furnace blacks.

3. The thermally modified carbon blacks in claim 1, wherein the process comprises:

a. providing an electro thermal furnace, a portion of the furnace defining a fluidizing zone, and a second portion defining an overbed zone; a plurality of nozzles for introducing fluidizing gas into the furnace;

b. introducing a non-reactive fluidizing gas through the nozzles so that the gas define an upward flow in the furnace;

c. introducing untreated carbon black material into the furnace at a predetermined rate so the carbon black forms a fluidized bed;

d. energizing an electrode in the furnace to heat the fluidized bed; and

e. continuously collecting the treated carbon black from a furnace discharge pipe.

4. The thermally modified carbon blacks in claim 1, wherein the heat treated carbon black is used in food-contact type applications.

5. The thermally modified carbon blacks in claim 1, wherein the heat treated carbon black is used in moisture cured polymer systems applications.

6. The thermally modified carbon blacks in claim 1, wherein the heat treated carbon black is used in zinc-carbon dry cell battery applications.

7. The thermally modified carbon blacks in claim 1, wherein the heat treated carbon black is used in semi-conductive wire and cable applications.

8. The thermally modified carbon blacks in claim 1, wherein the heat treatment takes place at between 800 to 3000°C.

9. The thermally modified carbon blacks in claim 1, wherein the heat treatment removes sulfur, graphitizes the carbon black, reduces PAH content, reduces volatile metal content, and minimizes the moisture pick-up by carbon black.

10. The thermally modified carbon blacks in claim 1,wherein the carbon blacks comprise the carbonaceous material in the formulation of the electrode for an electrochemical power source.

11. The thermally modified carbon blacks in claim 1, wherein the carbon blacks comprise, in combination with any other carbonaceous materials, 0.01 to 8 wt% of the total amount of carbonaceous materials.

12. The thermally modified carbon blacks in claim 1, wherein the carbon blacks comprise amounts of 0.01 to 8 wt% of the total amount of materials in a drilling mud formulation for oil field applications.

13. The thermally modified carbon blacks in claim 1, wherein the carbon blacks comprise the carbonaceous material in the formulation of a cathode ray TV tube coating.

14. The thermally modified carbon blacks in claim 1, wherein the carbon blacks are used in amounts from 0.01% to 99.9% of the total amount of carbonaceous materials in the formulation of a cathode ray TV tube coating.

15. The thermally modified carbon black in claim 1, wherein the carbon blacks are used as the carbonaceous material in the formulation of an electrically conductive coating.

16. The thermally modified carbon blacks in claim 1, wherein the carbon blacks are used in amounts from 0.01% to 99.9% of the total amount of carbonaceous materials in the formulation of an electrically conductive coating.

17. Thermally modified carbon blacks comprising a particle size of between 7nm to 500nm and an oil adsorption number of between 30 and 300ml/100g, the carbon blacks produced by a continuous electrothermal furnace treatment process comprising the following steps:

a. providing an electro thermal furnace, a portion of the furnace defining a fluidizing zone, and a second portion defining an overbed zone; a plurality of nozzles for introducing fluidizing gas into the furnace;

b. introducing a non-reactive fluidizing gas through the nozzles so that the gas defines an upward flow in the furnace;

c. introducing untreated carbon black material into the furnace at a predetermined rate so the carbon black forms a fluidized bed;

d. energizing an electrode in the furnace to heat the fluidized bed to a temperature between 800 to 3000°C; and

e. continuously collecting the treated carbon black from a furnace discharge pipe in the form of a graphitized carbon black having substantially no sulfur content, substantially no residual PAH content, minimal moisture pick-up and increased oxidation resistance.

18. A thermally modified carbon black for semi-conductive wire and cable applications, when prepared by a continuous electrothermal furnace treatment process, which exhibits a graphitized particle size of 7-500 nm and an oil absorption number of around 30-300 ml/100gm; and the compound prepared from which exhibits superior interfacial smoothness with increased conductivity, and melt flow properties.

19. A thermally modified carbon black for zinc-carbon dry cell applications, when prepared by a continuous electrothermal furnace treatment process, which exhibits a graphitized particle size of 7-500 nm and an oil absorption number of around 30-300 ml/100gm; and which exhibits a stronger structure and a greater resistance to oxidation than acetylene black.

20. A thermally modified carbon black for food contact-type applications, prepared by a continuous electrothermal furnace treatment process, which exhibits a graphitized particle size of 7-500 nm and an oil absorption number of around 30-300 ml/100gm; and meets FDA requirements.

21. A thermally modified carbon black for moisture cured polymer applications, prepared by a continuous electrothermal furnace treatment process, which exhibits a graphitized particle size of 7-500 nm and an oil absorption number of around 30-300 ml/100gm and reduced moisture pickup.

22. Thermally modified carbon blacks for semi-conductive wire and

cable applications, which exhibit a graphitized particle size of 7-500 nm and an oil absorption number of around 30-300 ml/100gm; and which provide, when compounded, superior interfacial smoothness with increased conductivity, and melt flow properties produced by the following heat treatment process:

a. providing an electro thermal furnace, a portion of the furnace defining a fluidizing zone, and a second portion defining an overbed zone; a plurality of nozzles for introducing fluidizing gas into the furnace;

b. introducing a non-reactive fluidizing gas through the nozzles so that the gas defines an upward flow in the furnace;

c. introducing untreated carbon black material into the furnace at a predetermined rate so the carbon black forms a fluidized bed;

d. energizing an electrode in the furnace to heat the fluidized bed to a temperature between 800 to 3000°C; and

e. continuously collecting the treated carbon black from a furnace discharge pipe in the form of a graphitized carbon black having no sulfur content, minimal moisture pick-up and increased oxidation resistance.

23. Thermally modified carbon blacks for zinc-carbon dry cell applications, which exhibit a graphitized particle size of 7-500 nm and an oil absorption number of around 30-300 ml/100gm; and having increased conductivity, produced by the following heat treatment process:

a. providing an electro thermal furnace, a portion of the furnace defining a fluidizing zone, and a second portion defines an overbed zone; a plurality of nozzles for introducing fluidizing gas into the furnace;

b. introducing a non-reactive fluidizing gas through the nozzles so that the gas defines an upward flow in the furnace;

c. introducing untreated carbon black material into the furnace at a predetermined rate so the carbon black forms a fluidized bed;

d. energizing an electrode in the furnace to heat the fluidized bed to a temperature between 800 to 3000°C; and

e. continuously collecting the treated carbon black from a furnace discharge pipe in the form of a graphitized carbon black having no sulfur content, minimal moisture pick-up and increased oxidation resistance.

24. Thermally modified carbon blacks for moisture cured polymer applications, selected from a group including polyurethane foam applications; polyurethane acrylates, cyanoacrylates, epoxies and

silicones applications, which exhibit a graphitized particle size of 7-500 nm and an oil absorption number of around 30-300 ml/100gm; and having reduced moisture pickup properties produced by the following heat treatment process:

a. providing an electro thermal furnace, a portion of the furnace defining a fluidizing zone, and a second portion defines an overbed zone; a plurality of nozzles for introducing fluidizing gas into the furnace;

b. introducing a non-reactive fluidizing gas through the nozzles so that the gas defines an upward flow in the furnace;

c. introducing untreated carbon black material into the furnace at a predetermined rate so the carbon black forms a fluidized bed;

d. energizing an electrode in the furnace to heat the fluidized bed to a temperature between 800 to 3000°C; and

e. continuously collecting the treated carbon black from a furnace discharge pipe in the form of a graphitized carbon black having no sulfur content, minimal moisture pick-up and increased oxidation resistance.

25. Thermally modified carbon blacks for food-contact type applications, which exhibit a graphitized particle size of 7-100 nm and an oil absorption number of around 30-300 ml/100gm; and having reduced PAH content produced by the following heat treatment process:

a. providing an electro thermal furnace, a portion of the furnace defining a fluidizing zone, and a second portion defines an overbed zone; a plurality of nozzles for introducing fluidizing gas into the furnace;

b. introducing a non-reactive fluidizing gas through the nozzles so that the gas defines an upward flow in the furnace;

c. introducing untreated carbon black material into the furnace at a predetermined rate so the carbon black forms a fluidized bed;

d. energizing an electrode in the furnace to heat the fluidized bed to a temperature between 800 to 3000°C; and

e. continuously collecting the treated carbon black from a furnace discharge pipe in the form of a graphitized carbon black having no sulfur content, minimal moisture pick-up and increased oxidation resistance.

26. An alkaline cell of an electrochemical system Zn/KOH/MnO2, comprising a thermally modified carbon black added to the cathode formulation.

27. The alkaline cell in claim 26, further comprising a thermally modified carbon black as the conductive additive used in combination with any other carbonaceous materials in the amounts of 0.01 to 8 wt% of the total amount of carbonaceous materials.

28. An electrochemical cell, comprising a thermally modified carbon black added to the electrode formulation.

29. The electrochemical cell in claim 28, further comprising a thermally modified carbon black as the conductive additive used in combination with any other carbonaceous materials in the amounts of 0.01 to 8 wt% of the total amount of carbonaceous materials.

30. The electrochemical cell in claim 28, wherein the cell would comprise a conductive coating of carbonaceous material in the amount of 0.01% to 99.9% of the total amount of carbonaceous material.

31. An assembly or a part of an electrochemical cell which comprises a thermally modified carbon black.

32. An assembly or a part of an electrochemical cell which comprises a thermally modified carbon black in the amounts of 0.01 to 99.9 wt% of the assembly.

33. The assembly in claims 31, wherein the assembly is prepared by a process selected from the group of pressing, molding, compacting, electro-consolidating, hot pressing or rolling.

34. An electrochemical cell comprising a thermally modified carbon black additive for the purpose of applications as a catalyst of chemical and electrochemical reactions and processes.

35. An electrochemical cell comprising a thermally modified carbon black additive for the purpose of applications as a catalyst of chemical and electrochemical reactions and processes used in amounts from 0.01 to 99.9% of the catalyst containing electrode.

36. An electrical resistance dependent application comprising a thermally modified carbon black as part of the formulation with other powdered materials in amounts from 0.01 to 99.9 wt% of the electrical resistance dependent application device.